

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A continuous process for the manufacture of 3-(methylthio) propionaldehyde-MTPA, ~~characterized in that the process comprising:~~
 - (a) subjecting propylene to a vapor-phase oxidation (101) of propylene is ~~carried out using a catalyst, so as to obtain a crude acrolein-based product (105);~~
 - (b) removing acids present in the crude acrolein-based product; ~~(105) obtained in the preceding stage are removed (106);~~
 - (c) the product obtained in the preceding stage is absorbed (110) absorbing ~~the crude acrolein-based product with water, so as to obtain an aqueous acrolein solution; (2);~~
 - (d) said solution (2) is purified, so as purifying the aqueous acrolein ~~solution to obtain purified gaseous acrolein; (12); and~~
 - (e) reacting the purified gaseous acrolein obtained in the preceding stage is ~~reacted (115) with MSH, that is to say methyl mercaptan, so as to obtain 3-(methylthio) propionaldehyde;MTPA;~~

wherein:

and the “noncondensable” noncondensable gases originally present in the crude product (105) resulting from oxidation stage produced in step (a) are separated before from the acrolein prior to stage step (e).

2. (Currently Amended) The process as claimed in claim 1, wherein ~~characterized in that the separation of the “noncondensable” noncondensable gases produced in step (a) is carried out are separated from the acrolein prior to step before purification stage~~ (d).

3. (Currently Amended) The process as claimed in claim 2, wherein ~~characterized in that the separation of the “noncondensable”~~ noncondensable gases is carried out produced during stage in step (a) are separated from the acrolein prior to (b) and/or stage step (c).

4. (Currently Amended) The process as claimed in claim 3, ~~characterized in that the separation of wherein~~ the “noncondensable” noncondensable gases is carried out during produced in step (a) are separated from the acrolein in steps stage (b) and (c).

5. (Currently Amended) The process as claimed in claim 1, ~~characterized in that wherein~~ the “noncondensable” noncondensable gases separated from the acrolein are recycled to the vapor-phase oxidation reaction stage of step (a).

6. (Currently Amended) The process as claimed in claim 1, ~~characterized in that wherein~~ the “noncondensable” noncondensable gases separated from the acrolein are discharged and incinerated.

7. (Currently Amended) A continuous process for the manufacture of 3-(methylthio) propionaldehyde-MTPA, ~~characterized in that the process comprising:~~

(a) subjecting propylene a to vapor-phase oxidation (101) of propylene is carried out using a catalyst, so as to obtain a crude acrolein-based product; (105);

(b) removing acids present in the crude acrolein-based product; (105) obtained in the preceding stage are removed (106);

(c) the product obtained in the preceding stage is absorbed (110) absorbing the crude-acrolein product with water, so as to obtain an aqueous acrolein solution (2) separated from the “noncondensable” noncondensable gases,

(d) said solution (2) is purified, so as purifying the aqueous acrolein solution to obtain purified gaseous acrolein, and

(e) reacting the purified gaseous acrolein ~~obtained in the preceding stage is reacted (115) directly with MSH, that is to say methyl mercaptan, so as to obtain MTPA 3-~~
(methylthio) propionaldehyde.

8. (Currently Amended) The process as claimed in claim 1, ~~characterized in that stage wherein purified gaseous acrolein (e) is carried out between MSH and acrolein maintained in the gas phase is reacted with gaseous methyl mercaptan in step (e).~~

9. (Currently Amended) The process as claimed in claim 1, ~~characterized in that stage (d) of wherein purification of the aqueous acrolein solution (2) in step (d) is purified by a process comprising is carried out according to the following process:~~

[[-]] introducing the aqueous acrolein solution ~~is introduced~~ into a distillation column ~~(1)~~ equipped at its base with at least one boiler and at its top with at least one condenser ~~(7)~~,

[[-]] withdrawing a liquid mixture essentially comprising water ~~is withdrawn (4)~~ at the base of the distillation column,

[[-]] withdrawing a gas mixture essentially comprising acrolein and water ~~is withdrawn (6)~~ at the top ~~(5)~~ of the distillation column,

[[-]] cooling the gas mixture ~~(6)~~ withdrawn at the top of the distillation column ~~is cooled~~, in the condenser, to a temperature which makes it possible to obtain, on the one hand, an aqueous condensate ~~(13)~~ and, on the other hand, an acrolein-rich gas mixture ~~(12)~~, and

[[-]] withdrawing the acrolein-rich gas mixture ~~is withdrawn (12)~~.

10. (Currently Amended) The process as claimed in claim 9, ~~characterized in that wherein~~ the aqueous acrolein solution ~~(2)~~ has a concentration of acrolein of less than or equal to the solubility limit of acrolein in water.

11. (Currently Amended) The process as claimed in claim 9, ~~characterized in that~~ wherein the distillation column-(1) is maintained at a pressure P and ~~in that~~ the temperature in the condenser-(7) is maintained at a value T according to the equation $T > 21.28 \cdot P + 32.9$.

12. (Currently Amended) The process as claimed in claim 11, ~~characterized in that~~ wherein the distillation column-(1) is maintained at atmospheric pressure and the temperature in the condenser is maintained at a value of greater than 54°C, ~~preferably ranging from 55 to 70°C, especially ranging from 60 to 65°C.~~

13. (Currently Amended) The process as claimed in claim 1, ~~characterized in that~~ wherein the acrolein-rich gas mixture-(2) has an acrolein concentration ranging from 86 to 95% by weight, ~~preferably from 88 to 94% by weight, especially from 90 to 93% by weight.~~

14. (Currently Amended) The process as claimed in claim 1, ~~characterized in that~~ wherein the condensate-(13) is at least partially reintroduced into the distillation column-(1).

15. (Currently Amended) The process as claimed in claim 14, ~~characterized in that~~ wherein all of the condensate-(13) is reintroduced at the top of the distillation column-(1).

16. (Currently Amended) A process for the purification of acrolein, the process comprising in which:

[[-]] introducing an aqueous acrolein solution ~~is introduced~~-(2) into a distillation column (1) equipped at its base with at least one boiler and at its top with at least one condenser (7),

[[-]] withdrawing a liquid mixture comprising water ~~is withdrawn~~-(4) at the base of the distillation column,

[[-]] withdrawing a gas mixture comprising acrolein ~~is withdrawn~~-(6) at the top of the distillation column,

[[-]] cooling the gas mixture-~~(6)~~ withdrawn at the top of the distillation column is ~~cooled~~, in the condenser, to a temperature which makes it possible to obtain, on the one hand, an aqueous condensate-~~(13)~~ and, on the other hand, an acrolein-rich gas mixture-~~(12)~~, and

[[-]] withdrawing ~~said the~~ gas mixture is ~~withdrawn~~,
characterized in that wherein the distillation-~~(1)~~ is determined ~~in order~~ to obtain, at the base of the column-~~(1)~~, a nonazeotropic liquid mixture essentially comprising water and the condensation-~~(7)~~ is determined ~~in order~~ to obtain an aqueous condensate-~~(13)~~ substantially depleted in acrolein and a gas mixture-~~(12)~~ substantially enriched in acrolein.

17. (Currently Amended) The process as claimed in claim 16, ~~characterized in that~~ wherein the gas mixture obtained at the column top comprises, by volume, between 30% and 70% ~~and preferably between 40% and 60% of water.~~

18 (Currently Amended) The process as claimed in claim 7, ~~characterized in that~~ wherein stage-step (e) is carried out between ~~MSH~~ methyl mercaptan and acrolein maintained in the gas phase.

19. (Currently Amended) The process as claimed in claim 7, ~~characterized in that~~ wherein stage (d) of purification of the aqueous acrolein solution-~~(2)~~ is carried out according to the following process in step (d) is purified by a process comprising:

[[-]] introducing the aqueous acrolein solution ~~is introduced~~ into a distillation column-~~(1)~~ equipped at its base with at least one boiler and at its top with at least one condenser-~~(7)~~,

[[-]] withdrawing a liquid mixture essentially comprising water ~~is withdrawn~~ ~~(4)~~ at the base of the distillation column,

[[-]] withdrawing a gas mixture essentially comprising acrolein and water ~~is withdrawn~~ ~~(6)~~ at the top-~~(5)~~ of the distillation column,

[[-]] cooling the gas mixture-~~(6)~~ withdrawn at the top of the distillation column-is cooled, in the condenser, to a temperature which makes it possible to obtain, on the one hand, an aqueous condensate-~~(13)~~ and, on the other hand, an acrolein-rich gas mixture-~~(12)~~, and

[[-]] withdrawing the acrolein-rich gas mixture-is withdrawn-~~(12)~~.